WHAT IS CLAIMED IS:

1. A method of controlling the turbine of a turbine powered generating system regardless of the load on said system, to maximize the efficiency of said turbine, said turbine having a fixed inlet nozzle geometry, said system further including an electrical generator, and a storage device, said method comprising:

(a) maintaining said inlet nozzle at a substantially constant temperature;

(b) using said electrical generator to satisfy the power demand on said system until said system is required to satisfy an additional power demand;

(c) when said additional power is demanded, temporarily using said storage device to satisfy said additional power demand and at least a portion of said power demand;

(d) increasing the speed of said turbine from the speed required to satisfy said power demand to a higher speed required to satisfy said power demand and said additional power demand; and

(e) once said higher speed is achieved, using said electrical generator to satisfy both said power demand and said additional power demand.

2. The method as set forth in claim 1, wherein said

substantially constant temperature is at or near the maximum design temperature of said turbine.

3. The method of claim 1, wherein said external storage device is used to temporarily satisfy all of said additional power demand and said power demand.

4. A method of controlling the turbine of a turbine powered generating system regardless of the load on said system, to maximize the efficiency of said turbine, said turbine having a fixed inlet nozzle geometry, said system further including an electrical generator, and a storage device, said method comprising:

(a) maintaining said inlet nozzle at a substantially constant temperature;

(b) using said electrical generator to satisfy the power demand on said system until said system is required to satisfy a lower power demand;

(c) when said lower power is demanded, temporarily increasing the power demand on said generator and temporarily using said storage device to absorb said additional power demand and at least a portion of said power demand;

(d) decreasing the speed of said turbine from the speed required to satisfy said power demand to a lower speed required to

satisfy said lower power demand; and

(e) once said lower speed is achieved, using said electrical generator to satisfy said lower power demand.

5. A method as set forth in claim 4, wherein said constant temperature is at or near the maximum design temperature of said turbine.

6. A turbine powered generating system comprising:

(a) a turbine having a fixed inlet nozzle and a predetermined maximum inlet temperature;

(b) a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

(c) an energy storage device, said storage device also capable of supplying said power demand on said system; and

(d) a controller, coupled to both said storage device and said turbine, for maintaining said inlet nozzle at or near said maximum inlet temperature, said controller, in response to an additional power demand on said system, causing said energy storage device to satisfy said additional power demand and at least a portion of said power demand, to allow the speed of said turbine to increase to a higher speed at which said generator can satisfy said additional power demand and said power demand.

7. The generating system of claim 6, wherein said controller causes said additional power demand and said power demand to be shifted to said generator when said turbine reaches said higher speed.

8. The generating system of claim 6, wherein said controller, in response to said additional power demand, causes said energy storage device to temporarily supply all of said power demand.

9. The generating system of claim 6, wherein said storage device is selected from the group including a battery, a flywheel, a capacitor or a power grid.

10. The generating system of claim 9, wherein said storage device is a battery and said battery is sized to supply the maximum power demand on said system.

11. The generating system of claim 6, wherein said turbine is a microturbine.

12. The generating system of claim 11, wherein said microturbine is a recuperated microturbine.

13. The generating system of claim 6, wherein said controller

includes means, in response to a lower power demand on said system, for causing said power demand on said generator to be temporarily increased and temporarily absorbed by said energy storage device.

14. The generating system of claim 13, wherein said controller shifts said lower power demanded to said generator when said turbine has decelerated to the speed required to satisfy said lower power demanded.

15. A turbine powered generating system comprising:

(a) a turbine having a fixed inlet nozzle and a predetermined maximum inlet temperature;

(b) a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

(c) an energy storage device, said storage device also capable of temporarily absorbing at least a portion of said power demand on said system; and

(d) a controller, coupled to both said storage device and said turbine, for maintaining said inlet nozzle at or near said maximum inlet temperature, said controller including means, in response to a decreased power demand on said system, for temporarily causing an additional power demand on said generator and for causing said additional power demand and at least a

portion of said power demand to be shifted to said energy storage device to allow the speed of said turbine to decrease to a lower speed, where said generator can supply said decreased power demand.

16. Apparatus for controlling a turbine power generation system, said system including a turbine having a fixed inlet nozzle, said system being responsive to a load demand during operation, the apparatus comprising:

(a) an electric generator;

(b) an energy storage device;

(c) a controller including means for monitoring the speed of said turbine and the temperature of said inlet nozzle, said controller further including means for determining whether to shift any of said load demand from said generator to said energy storage device when said load demand changes; and

(d) means, responsive to said controller, for regulating fuel flow to said turbine to hold said temperature of said inlet nozzle substantially constant, even when said load demand changes.

17. The apparatus of claim 16, wherein said controller causes said regulating means to hold said temperature of said inlet nozzle substantially constant, independent of turbine speed.

18. The apparatus of claim 16, wherein turbine speed is controlled by regulating a load on said generator in order to maintain a speed set point.

19. The apparatus of claim 18, wherein said turbine speed set point is determined by said load demand and achieved by controlling said generator load independent of said load demand.

20. The apparatus of claim 18, wherein said controller causes said generator load to increase when said turbine speed increases above said speed set point.

21. A method of controlling the turbine of a turbine powered generating system regardless of the load on said system, to maximize the efficiency of said turbine, said turbine having a fixed inlet nozzle geometry, said system further including an electrical generator, and a storage device, said method comprising:

(a) maintaining said inlet nozzle at a substantially constant temperature;

(b) using said electrical generator to satisfy the power demand on said system until said system is required to satisfy an additional power demand;

(c) when said additional power is demanded, temporarily using said storage device to satisfy said additional power demand and a portion of said power demand;

(d) increasing the speed of said turbine from the speed required to satisfy said power demand to a higher speed required to satisfy said power demand and said additional power demand; and

(e) once said higher speed is achieved, using said electrical generator to satisfy both said power demand and said additional power demand.

22. The method as set forth in claim 1, wherein said substantially constant temperature is at or near the maximum design temperature of said turbine.

23. A method of controlling the turbine of a turbine powered generating system regardless of the load on said system, to maximize the efficiency of said turbine, said turbine having a fixed inlet nozzle geometry, said system further including an electrical generator, and a storage device, said method comprising:

(a) maintaining said inlet nozzle at a substantially constant temperature;

(b) using said electrical generator to satisfy the power demand on said system until said system is required to satisfy a lower

power demand;

(c) when said lower power is demanded, temporarily increasing the power demand on said generator and temporarily using said storage device to absorb said additional power demand and a portion of said power demand;

(d) decreasing the speed of said turbine from the speed required to satisfy said power demand to a lower speed required to satisfy said lower power demand; and

(e) once said lower speed is achieved, using said electrical generator to satisfy said lower power demand.

24. A method as set forth in claim 23, wherein said constant temperature is at or near the maximum design temperature of said turbine.

25. A turbine powered generating system comprising:

(a) a turbine having a fixed inlet nozzle and a predetermined maximum inlet temperature;

(b) a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

(c) an energy storage device, said storage device also capable of supplying said power demand on said system; and

(d) a controller, coupled to both said storage device and said turbine, for maintaining said inlet nozzle at or near said

maximum inlet temperature, said controller, in response to an additional power demand on said system, causing said energy storage device to satisfy said additional power demand and a portion of said power demand, to allow the speed of said turbine to increase to a higher speed at which said generator can satisfy said additional power demand and said power demand.

26. The generating system of claim 25, wherein said controller causes said additional power demand and said power demand to be shifted to said generator when said turbine reaches said higher speed.

27. The generating system of claim 25, wherein said storage device is selected from the group including a battery, a flywheel, a capacitor or a power grid.

28. The generating system of claim 27, wherein said storage device is a battery and said battery is sized to supply the maximum power demand on said system.

29. The generating system of claim 25, wherein said turbine is a microturbine.

30. The generating system of claim 29, wherein said

microturbine is a recuperated microturbine.

31. The generating system of claim 25, wherein said controller includes means, in response to a lower power demand on said system, for causing said power demand on said generator to be temporarily increased and temporarily absorbed by said energy storage device.

32. The generating system of claim 31, wherein said controller shifts said lower power demanded to said generator when said turbine has decelerated to the speed required to satisfy said lower power demanded.

33. A turbine powered generating system comprising:

(a) a turbine having a fixed inlet nozzle and a predetermined maximum inlet temperature;

(b) a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

(c) an energy storage device, said storage device also capable of temporarily absorbing at least a portion of said power demand on said system; and

(d) a controller, coupled to both said storage device and said turbine, for maintaining said inlet nozzle at or near said maximum inlet temperature, said controller including means, in

response to a decreased power demand on said system, for temporarily causing an additional power demand on said generator and for causing said additional power demand and a portion of said power demand to be shifted to said energy storage device to allow the speed of said turbine to decrease to a lower speed, where said generator can supply said decreased power demand.

34. Apparatus for controlling a turbine power generation system, said system including a turbine having a fixed inlet nozzle, said system being responsive to a load demand during operation, the apparatus comprising:

(a) an electric generator;

(b) an energy storage device;

(c) a controller including means for monitoring the speed of said turbine and the temperature of said inlet nozzle, said controller further including means for determining whether to shift a portion of said load demand from said generator to said energy storage device when said load demand changes; and

(d) means, responsive to said controller, for regulating fuel flow to said turbine to hold said temperature of said inlet nozzle substantially constant, even when said load demand changes.

35. The apparatus of claim 34, wherein said controller causes

said regulating means to hold said temperature of said inlet nozzle substantially constant, independent of turbine speed.

36. The apparatus of claim 34, wherein turbine speed is controlled by regulating a load on said generator in order to maintain a speed set point.

37. The apparatus of claim 36, wherein said turbine speed set point is determined by said load demand and achieved by controlling said generator load independent of said load demand.

38. The apparatus of claim 36, wherein said controller causes said generator load to increase when said turbine speed increases above said speed set point.

39. A method of controlling a turbine powered generating system having an energy storage device and a turbine coupled to an electric generator, the method comprising:

maintaining the temperature of said turbine at a substantially constant temperature;

using said electric generator to satisfy the power demand on the system until the system is required to satisfy an additional power demand;

in response to said additional power demand, temporarily using said energy storage device to satisfy a portion of said power demand and said additional power demand;

increasing the speed of said turbine from the speed required to satisfy said power demand to a higher speed required to satisfy said power demand and said additional power demand; and

once said higher speed is achieved, using said electric generator to satisfy both said power demand and said additional power demand.

40. The method of claim 39, wherein said substantially constant temperature is at or near the maximum design temperature of said turbine.

41. The method of claim 39, wherein said external storage device is used to temporarily satisfy all of said additional power demand and said power demand.

42. A method as set forth in claim 39, further comprising:

in response to said additional power demand, temporarily allowing said turbine temperature to increase by a predetermined amount above said constant temperature.

43. A method of controlling a turbine powered generating system having an energy storage and discharge device and a turbine coupled to an electric generator, the method comprising:

maintaining said turbine at a substantially constant temperature;

using said electrical generator to satisfy the power demand on said system until said system is required to satisfy a lower power demand;

in response to said lower power demand, temporarily providing additional power above said lower power demand on said generator and temporarily using said storage and discharge device to absorb at least a portion of said additional power;

decreasing the speed of said turbine from the speed required to satisfy said power demand to a lower speed required to satisfy said lower power demand; and

once said lower speed is achieved, using said electrical generator to satisfy said lower power demand.

44. A method as set forth in claim 43, wherein said constant temperature is at or near the maximum design temperature of said turbine.

45. A method as set forth in claim 43, further comprising:

in response to said lower power demand, temporarily allowing said turbine temperature to increase by a predetermined amount above said constant temperature.

46. A turbine powered generating system comprising:

(a) a turbine having a fixed inlet nozzle;

(b) a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

(c) an energy storage device; and

(d) a controller, coupled to both said storage device and said turbine, for maintaining said turbine at or near a predetermined temperature, said controller, in response to an additional power demand on said system, causing said energy storage device to satisfy a portion of said power demand and said additional power demand, to allow the speed of said turbine to increase to a higher speed at which said generator can satisfy said additional power demand and said power demand.

47. The generating system of claim 46, wherein said controller causes said additional power demand and said power demand to be shifted to said generator when said turbine reaches said higher speed.

48. The generating system of claim 46, wherein said controller,

in response to said additional power demand, causes said energy storage device to temporarily supply all of said power demand.

49. The generating system of claim 46, wherein said storage device is selected from the group including a battery, a flywheel, a capacitor and a power grid.

50. The generating system of claim 49, wherein said storage device is a battery and said battery is sized to supply the maximum power demand on said system.

51. The generating system of claim 46, wherein said turbine is a microturbine.

52. The generating system of claim 51, wherein said microturbine is a recuperated microturbine.

53. The generating system of claim 46, wherein said controller includes means, in response to a lower power demand on said system, for causing said power demand on said generator to be temporarily increased and temporarily absorbed by said energy storage device.

54. The generating system of claim 53, wherein said controller

shifts said lower power demanded to said generator when said turbine has decelerated to the speed required to satisfy said lower power demanded.

55. The generating system of claim 46, wherein said controller comprises:

a controller for, in response to said additional power demand, temporarily allowing said turbine temperature to increase by a predetermined amount above said constant temperature.

56. A turbine powered generating system comprising:

a turbine having a fixed inlet nozzle and a predetermined maximum temperature;

a generator coupled to said turbine, said generator capable of supplying the power demand on said system;

an energy storage and discharge device, said storage and discharge device also capable of temporarily absorbing at least a portion of said power demand on said system; and

a controller, coupled to both said storage and discharge device and said turbine, for maintaining said turbine at or near said maximum temperature, said controller including means, in response to a decreased power demand on said system, for temporarily providing additional power above said power demand

on said generator and for causing at least a portion of said additional power and said power demand to be shifted to said energy storage and discharge device to allow the speed of said turbine to decrease to a lower speed, where said generator can supply said decreased power demand.

57. Apparatus for controlling a turbine power generation system, said system including a turbine having a fixed inlet nozzle, said system being responsive to a load demand during operation, the apparatus comprising:

an electric generator;

an energy storage and discharge device;

a controller including means for monitoring the speed of said turbine and the temperature of said inlet nozzle, said controller further including means for determining whether to shift any of said load demand from said generator to said energy storage and discharge device when said load demand changes; and

means, responsive to said controller, for regulating fuel flow to said turbine to hold said temperature of said inlet nozzle substantially constant, even when said load demand changes.

58. The apparatus of claim 57, wherein said controller causes said regulating means to hold said temperature of said inlet

nozzle substantially constant, independent of turbine speed.

59. The apparatus of claim 57, wherein turbine speed is controlled by regulating a load on said generator in order to maintain a speed set point.

60. The apparatus of claim 59, wherein said turbine speed set point is determined by said load demand and achieved by controlling said generator load independent of said load demand.

61. The apparatus of claim 59, wherein said controller causes said generator load to increase when said turbine speed increases above said speed set point.

62. The generating system of claim 57, wherein said controller comprises:

a controller for, in response to said load demand changes, temporarily allowing said inlet nozzle temperature to increase by a predetermined amount above said constant temperature.